

Application No.: 10/789,259
Office Action dated 03/21/2005
Reply dated 06/21/2005

Atty Docket No.: SOHMEI.PT1010
Customer No.: 24943

AMENDMENTS TO THE DRAWINGS

Please correct Figure 17 as follows on the attached replacement sheet. No new matter is involved.

REMARKS

I. STATUS OF SPECIFICATIONS

The title of the invention has been changed to be more descriptive of the invention to which the claims are directed. Accordingly, Applicant respectfully requests entry of the change in the title.

II. STATUS OF DRAWINGS

Element 190b of Figure 17 has been corrected to 175e to correspond with Figure 15. No new matter is involved. Accordingly, Applicant respectfully requests entry of the change in Figure 17 by acceptance of the replacement sheet for Figure 17.

III. STATUS OF THE CLAIMS

Claims 1-5 were pending in the Application. Claims 1-5 were amended in a Preliminary Amendment submitted on February 26, 2004. Examiner is correct in that there are no Claims 12-17 in the Application, as such indication was a typographical error. Examiner's objections to and rejections of the claims will be considered as based on the Preliminary Amendment. By this amendment, Claims 1, 3 and 4 are being amended. Claims 2 and 5 are being cancelled. No new matter is involved.

Claim 1 was rejected in the Office Action under 35 U.S.C. § 103(a) (hereinafter, "Section 103(a)") as being unpatentable over White III et al. (U.S. Pat. No. 5,042,238, hereinafter, "White"), in view of Ogano et al. (U.S. Pat. No. 4,694,942, hereinafter "Ogano").

Claims 3 and 4 were rejected under Section 103(a) as being unpatentable over White, in view of Hunt (U.S. Pat. No. 6,604,348).

Claim 5 was rejected under Section 103(a) as being unpatentable over White, in view of Burdsall et al. (U.S. Pat. No. 5,163,274, hereinafter "Burdsall").

Applicant respectfully traverses all rejections and requests reconsideration.

A. OBJECTION TO CLAIMS

The claims were objected to because they include reference characters which are not enclosed within parentheses. The Examiner required correction under MPEP § 608.01(m). Applicant has amended claim 4 to enclose the reference character "S" in parentheses as required. Accordingly, Applicant respectfully requests withdrawal of the objection to the claims.

B. ALLOWABLE SUBJECT MATTER

Claim 2 was objected to as being dependent upon a rejected base claim, Claim 1. However, the Examiner indicated that Claim 2 would be allowable if rewritten in independent form including all of the limitations of Claim 1. Accordingly, Applicant respectfully submits the amendment to Claim 1, which incorporates all of the limitations of Claim 2. As such, Claim 2 has been rewritten in independent form as amended Claim 1. In addition, Applicant respectfully requests that Claim 2 be cancelled without prejudice or disclaimer of the subject matter therein. Therefore, Applicant respectfully requests withdrawal of the objection to Claim 2.

C. REJECTION UNDER SECTION 103(a), White in view of Ogano

Claim 1 was rejected under Section 103(a) as being unpatentable over White in view of Ogano. In addition, Claim 2 was objected to as being dependent upon a rejected base claim, Claim 1. However, the Examiner indicated that Claim 2 would be allowable if rewritten in independent form including all of the limitations of Claim 1. Accordingly, Applicant respectfully submits the amendment to Claim 1, which incorporates all of the limitations of Claim 2. Thus, Claim 2 has been rewritten in independent form including all of the limitations of the base claim and any intervening claims as currently amended Claim 1. Therefore, Applicant respectfully requests withdrawal of the rejection of amended Claim 1 under Section 103(a).

D. REJECTION UNDER SECTION 103(a), White in view of Hunt

Claims 3 and 4 were rejected under Section 103(a) as being unpatentable over White in view of Hunt. In rejecting Claim 3 as being unpatentable over White in view of Hunt, the Examiner stated that White discloses all the claim limitations of claim 3 except:

“However, White fails to disclose a pair of variable capacity pumps and a pair of hydraulic motors; a PTO shaft on which the pair of variable capacity pumps are provided front and back in a row, for driving the mower provided in parallel with these variable capacity pumps. Hunt discloses a similar mower (10) including a pair of variable capacity pumps (40) and a pair of hydraulic motors (40h); a PTO shaft (236) on which the pair of variable capacity pumps (40) are provided front and back in a row, for driving the mower (10) provided in parallel with these variable capacity pumps (40).” (Office Action, page 4)

The Examiner stated it would have been obvious to one having ordinary skill in the art at the time the invention was made to include the pumps of Hunt on the mower of White in order to drive the hydraulic motors. (Office Action, page 5).

In rejecting Claim 4 as being unpatentable over White in view of Hunt, the Examiner stated that White discloses all the claim limitations of claim 4 except:

“However, White fails to disclose a pair of variable capacity pumps and a pair of hydraulic motors; and the PTO shaft for driving the mower provided in a manner one-sided to the right or left with respect to a centerline S that is in the right and left direction in terms of the forward direction; and the pair of variable capacity pumps provided on the side opposite the PTO shaft with respect to the centerline S in the right and left direction. Hunt discloses a similar mower (10) including a pair of variable capacity pumps (40) and a pair of hydraulic motors (40h); a PTO shaft (236) for driving the mower (10) provided in a manner one-sided to the right or left with respect to the centerline that is in the right and left direction in terms of the forward direction; and the pair of variable capacity pumps (40) provided on the side opposite the PTO shaft (236) with respect to the centerline in the right and left direction.” (Office Action, page 5-6).

The Examiner stated it would have been obvious to one having ordinary skill in the art at the time the invention was made to include the pumps of Hunt on the mower of White in order to drive the hydraulic motors. (Office Action, page 6)

Applicant respectfully traverses Examiner’s rejections as explained below.

As explained in M.P.E.P. Section 706.02(j):

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

The three above-mentioned criteria must exist at the time the claimed invention was made, according to the text of Section 103(a) itself. The Examiner has not established a prima facie case of obviousness using White and Hunt for at least the reasons stated below.

White and Hunt

White discusses a riding lawn mower having an extremely small turning radius. Two identical mechanical transmissions (or hydrostatic transmissions) separately and independently drive each of the rear wheels. (White, col. 1 lines 7-10, col. 4, lines 29-32).

Hunt discusses a self-propelled robotic or autonomous mower that contains a hydraulic pump that drives multiple hydraulic motors connected to multiple cutting blades or grass cutting reels. (Hunt, col. 2, lines 18-22, col. 4, lines 5-17). In addition, Hunt discusses drive wheels driven by one or more electric motors. (Hunt, col. 2, lines 25-28, col. 4, lines 19-25).

Claims 3 and 4

Applicant has currently amended Claims 3 and 4. Applicant requires in currently amended Claims 3 and 4 the limitation of “a pair of hydrostatic transmissions (HSTs) driven by receiving revolution power of the engine, for rotating the pair of rear wheels in a forward rotation direction or a reverse rotation direction, provided with a *pair* of variable capacity pumps and a *pair* of hydraulic motors for the left and the right rear wheels respectively” (emphasis added). Currently amended Claims 3 and 4 further require a “PTO shaft, driven substantially directly by the power of the engine, on which the pair of variable capacity pumps are provided *front and back in a row*” (emphasis added).

With respect to White and Hunt, none of the references teach or suggest all the claim limitations of Applicant's Claims 3 and 4. As stated by Examiner, White fails to teach a number of limitations as mentioned above. (Office Action, pages 4-6). The Examiner cites Hunt as providing the deficiencies of White, however, Applicant respectfully traverses such assertion as discussed below.

Hunt discusses an engine-driven hydraulic drive for providing drive to the cutting blades by hydraulic motors driven by a hydraulic pump connected to the drive shaft of the engine. (Hunt, col. 4, lines 5-14). However, nowhere does Hunt teach that these hydraulic motors are provided "for rotating the pair of rear wheels in a forward rotation direction or a reverse rotation direction, provided with a pair of variable capacity pumps and a pair of hydraulic motors for the left and the right rear wheels respectively". Examiner cites that it would have been obvious "to include the pumps of Hunt on the mower of White in order to drive the hydraulic motors." However, Applicant respectfully disagrees as there is only a single pump disclosed in Hunt, there is no suggestion of "a pair of pumps". Neither is there any motivation to use the single pump of Hunt with the teaching of White which is dealing with drive for the rear wheels (White, col. 4, lines 31-32). Hunt specifically discloses a hydraulic pump which drives hydraulic motors for blade drive, not for "rotating the pair of rear wheels" as in Applicant's Claims 3 and 4. In fact, Hunt teaches away from engine driven wheel drive by explicitly teaching that the "mower wheel drive is never directly coupled to the engine but is connected to the electrical power source". (Hunt, col. 2, lines 38-40 and col. 4, lines 19-21). Hunt goes on to say that the reason for connecting the wheel drive to an electrical power source is "so that speed, direction and steering control is less costly and complex than in other types of propulsion systems, including hybrid systems, connecting the

engine more directly to the wheels". (Hunt, col. 2, lines 40-43). As such, there is no suggestion or motivation to combine Hunt which is devoid of a "pair of hydraulic pumps" and clearly teaches away from an engine driven wheel drive, with the teachings of White which is devoid of hydraulic motors, in order to obtain the limitations of claims 3 and 4.

In addition, Claims 3 and 4 were amended to include the limitation a "pair of hydraulic motors for the left and the right rear wheels respectively". Hunt does not teach or suggest that the hydraulic motors are "for the left and the right rear wheels respectively". Rather, as mentioned above, Hunt teaches that the hydraulic motors are to drive the cutting blades or reels of the mower. Hunt discloses that the drive wheels are connected to an electric motor structure powered exclusively by the source of electrical power. (Hunt, col. 2, lines 25-28). Nowhere does Hunt teach that the drive wheels can be powered by "a pair of hydraulic motors for the left and the right rear wheels respectively". Therefore, the disclosure of Hunt does not provide the deficiencies of White, and does not teach all the limitations of Claims 3 and 4.

As discussed above, Hunt discloses a single hydraulic pump (41) that drives three hydraulic motors (40h) individually connected to multiple cutting blades or reels (40r). (Hunt, col. 4, lines 5-17, Fig. 5). However, Hunt fails to disclose a *pair* of hydraulic pumps and a *pair* of hydraulic motors. Hunt only indicates that multiple hydraulic motors are driven by a hydraulic pump. Moreover, Hunt does not disclose that "the pair of variable capacity pumps are provided front and back in a row". Hunt only discloses a single pump. Hunt does not teach or even suggest that a pair of pumps is provided in a front and back direction in a row. It would not be routine skill in the art to obtain the limitations of arrangement of a pair of pumps front and back in a row especially when White is devoid of pumps and Hunt only

teaches a single pump. Thus, a pair of hydraulic pumps and the arrangement of the pumps front and back in a row are not taught anywhere in Hunt or White. As such, the disclosure of Hunt could not enable one skilled in the art to attain the limitations of Claims 3 and 4.

Therefore, White in view of Hunt fails to teach or suggest ALL claim limitations as required to establish a prima facie case of obviousness. As such, Applicant respectfully requests withdrawal of the rejection of Claims 3 and 4 under Section 103(a).

Claim 4

In addition to the above rationales, Applicant respectfully traverses Examiner's rejection of Claim 4 as explained below. As mentioned above, three criteria must exist at the time the claimed invention was made to support a rejection under Section 103(a). The Examiner has not established a prima facie case of obviousness using White and Hunt for at least the reasons stated below.

Applicant requires in currently amended Claim 4 the limitation of "a PTO shaft for driving the mower driven substantially directly by the power of the engine, provided in a manner one-sided to the right or left with respect to a centerline (S) positioned along the right and left direction in terms of the forward direction" (emphasis added). In addition, currently amended Claim 4 further requires the limitation of "the pair of variable capacity pumps are provided front and back in a row, on the side opposite the PTO shaft with respect to the centerline (S) in the right and left direction" (emphasis added).

With respect to White and Hunt, none of the references teach or suggest all the claim limitations of Applicant's Claim 4. Examiner states that White fails to teach the above limitations of claim 4 and that Hunt provides the deficiencies of White, however, Applicant

respectfully traverses such assertions as discussed below.

Hunt discusses a vertical drive shaft (234) connected through an electric PTO clutch (236). (Hunt, col. 4, lines 41-43). However, Hunt does not teach that the drive shaft is “provided in a manner one-sided to the right or left with respect to a centerline (S) positioned along the right and left direction in terms of the forward direction”. At most, Hunt teaches that the drive shaft is generally centered relative to the caster wheel and the drive wheel structure. (Hunt, col. 5, claim 2). Furthermore, nowhere does Hunt teach that “the pair of variable capacity pumps are provided front and back in a row, on the side opposite the PTO shaft with respect to the centerline (S) in the right and left direction”. Applicant respectfully requests Examiner to specifically show where such limitations are shown in Hunt as they are not apparent anywhere in the reference. Hunt does not teach a positioning of “a pair of hydraulic pumps” relative to the PTO shaft or a centerline of the mower. As such, the disclosure of Hunt fails to teach all the limitations of Claim 4.

Therefore, White in view of Hunt fails to teach or suggest ALL claim limitations as required to establish a prima facie case of obviousness. As such, Applicant respectfully requests withdrawal of the rejection of Claim 4 under Section 103(a).

Claim 5

Applicant respectfully requests that Claim 5 be cancelled without prejudice or disclaimer of the subject matter therein.

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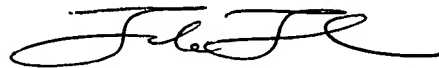
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IV. CONCLUSION

The above-discussed amendments and remarks are believed to place the present Application in condition for allowance. Should the Examiner have any questions regarding the above amendments, the Examiner is requested to telephone Applicant's representative at the number listed below.

Respectfully submitted,

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